

EXHIBIT 1

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

ALIGN TECHNOLOGY, INC.,

Plaintiff,

v.

3SHAPE TRIOS A/S and 3SHAPE A/S,

Defendants.

Civil Action No. 6:20-cv-00979-ADA

TABLE OF DISPUTED CLAIM CONSTRUCTIONS

I.	Color Scanning Patents.....	1
A.	[Issue A] Terms Relating to Whether Depth Data is Obtained Independently of Color Data	1
B.	[Issue B] Terms Related to Mapping of Color Data to Depth Data.....	4
C.	[Issue C] Terms Relating to Light/Light Beams.....	5
D.	[Issue D] Terms Relating to Focusing	7
E.	[Issue E] Terms Relating to Reference Array	8
II.	Selective Rescanning Patents.....	8
A.	[Issue F] Deleting, Removing, or Discarding Portions of a Model	8
B.	[Issue G] The Scope of a Physically Changed Intraoral Portion	10
C.	[Issue H] The Meaning of Replacing or Updating a Virtual Model.....	11
D.	[Issue I] The Meaning of User Input Identifying Portions of a Model.....	12
III.	Hole Closing Patent	13
A.	[Issue J] Determining a Missing Portion of the Intraoral Structure.....	13
B.	[Issue K] The Scope of Generating Second 3D Data.....	13

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

I. COLOR SCANNING PATENTS**A. [Issue A] Terms Relating to Whether Depth Data is Obtained Independently of Color Data**

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>[A.1] “depth data”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '433 Patent: claims 1, 2, 12, 13, 16 • '519 Patent: claim 1, 6, 13, 21, 24 • '151 Patent: claims 1, 10, 18, 25 • '152 Patent: claims 1, 9, 16, 23 	3D surface points obtained independently of the color data	Plain and ordinary meaning; if construction is required: three dimensional points
<p>[A.2] “scanning system configured to provide depth data of (said/the) portion”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '519 Patent: claim 1, 13, 24 	scanning system configured to obtain depth data independently of the color data of the portion	Plain and ordinary meaning

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>[A.3] “imaging system configured to provide (two-dimensional) color image data of (said/the) portion”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '519 Patent: claim 1, 13, 24 	<p>imaging device that uses colored illumination (<i>i.e.</i>, white light or sequential red, green, blue illumination) to obtain two-dimensional color image data independently of depth data of the object</p>	<p>Plain and ordinary meaning and not subject to § 112 ¶ 6, but if subject to § 112 ¶ 6:</p> <p>Function: to provide two-dimensional color image data of said portion</p> <p>Structure: scanning system adapted for providing two-dimensional color image data associated with a two-dimensional reference array (<i>See, e.g.</i>, 35:6-8.)</p>
<p>[A.4] “image gathering member to generate depth data of the structure portion”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '433 Patent: claims 1, 12 	<p><i>Subject to § 112 ¶ 6:</i></p> <p>Function: to generate depth data of the structure portion (corresponding to a two-dimensional reference array substantially orthogonal to a depth direction)</p> <p>Structure: scanning system comprising laser(s) coupled to a grating/microlens array, telecentric confocal optics, image sensor, processor to determine the maximum intensity of the light returned from illuminated spots at different positions of the telecentric confocal optics. Does not acquire color data (<i>i.e.</i> full spectrum of light required to generate color). (<i>See, e.g.</i>, '433 patent, 3:3–67, 5:3–5, 14:56–16:52, 24:30–35, FIGS. 1, 4A, 8, 11, 12, 13.)</p> <p><i>If found not subject to § 112 ¶ 6, then:</i></p> <p>scanning system to obtain depth data independently of color data of said portion</p>	<p>Plain and ordinary meaning and not subject to § 112 ¶ 6, but if subject to § 112 ¶ 6:</p> <p>Function: to generate depth data of the structure portion (corresponding to a two dimensional reference array substantially orthogonal to depth direction)</p> <p>Structure: scanning system that relies on confocal imaging arrangement (<i>See, e.g.</i>, 3:3–67, 5:3–5, 14:56–16:52, 24:30–35, FIGS 1, 4A, 8, 11, 12, 13.)</p>

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>[A.5] “color data (of the intra-oral structure)”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '151 Patent: claims 1, 18 • '152 Patent: claims 1, 9, 16, 23 <p>“color image data”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '519 Patent: claims 1, 6, 13, 24 • '151 Patent: claims 1, 10, 18, 25 • '152 Patent: claims 9 	<p>“color data of the intraoral structure”: data that represents the color of the intraoral structure obtained independently of the depth data</p> <p>“color image data”: image data representing the color of the three-dimensional object obtained independently of depth image data</p>	<p>“color data of the intraoral structure”: Plain and ordinary meaning, but if construction necessary: data that represents the color of the intraoral structure captured by the sensor</p> <p>“color data”: Plain and ordinary meaning</p> <p>“color image data”: Plain and ordinary meaning.</p>
<p>[A.6] “two-dimensional image data”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '433 Patent: claims 12, 13 <p>“two-dimensional (first/second) image data”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '433 Patent: claims 1, 2 	<p>Two-Dimensional Image Data: two-dimensional image data used to generate color independently of depth data</p> <p>Two-Dimensional (First/Second) Image Data: (first/second) two-dimensional image data used to generate color independently of depth data</p>	<p>Two-Dimensional Image Data: Plain and ordinary meaning.</p> <p>Two-Dimensional (First/Second) Image Data: Plain and ordinary meaning.</p>
<p>[A.7] “depth image data”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '151 Patent: claims 1, 10, 18, 25 • '152 Patent: claims 9 	<p>Indefinite. If not indefinite, depth image data obtained independently of color image data</p>	<p>Not indefinite; plain and ordinary meaning</p>

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

B. [Issue B] Terms Related to Mapping of Color Data to Depth Data

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>[B.1] “map the estimated image data to the depth data for the two-dimensional reference array”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '433 Patent: claim 1 	<p>match estimated color values at X-Y coordinates to substantially the same X-Y coordinates of the depth data</p>	<p>Plain and ordinary meaning</p>
<p>[B.2] “selectively map the image data to the depth data for the two-dimensional reference array based on the plurality of focal lengths and the depth data such that the resulting associated color of the structure portion is in focus relative to the structure portion for a plurality of distances in the depth direction”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '433 Patent: claim 12 	<p>selectively match color values at X-Y coordinates to substantially the same X-Y coordinates of the depth data based on the plurality of focal lengths and the depth data such that the entire wavelength composition of color is in focus relative to the structure portion for more than one distance in the depth direction</p>	<p>Plain and ordinary meaning</p>
<p>[B.3] “processor...configured to associate the depth data with the two-dimensional color image data”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '519 Patent: claims 1, 13 	<p>processor...configured to match depth data at X-Y coordinates to substantially the same X-Y coordinates of the two-dimensional color image data</p>	<p>Plain and ordinary meaning</p>

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

Term	3Shape's Proposed Construction	Align's Proposed Construction
[B.4] “(color) three-dimensional numerical entity” <i>Claims:</i> <ul style="list-style-type: none"> • '151 Patent: claims 1, 10, 11, 18, 25 • '152 Patent: claims 1, 9, 23 	new numerical entity created by matching X-Y coordinates of the color data to substantially the same X-Y coordinates of the independently obtained depth data	numerical entity created by associating coordinates of color data to coordinates of depth data

C. [Issue C] Terms Relating to Light/Light Beams

Term	3Shape's Proposed Construction	Align's Proposed Construction
[C.1] “illumination unit configured to transmit a first array of incident light along a path towards the three-dimensional structure” <i>Claims:</i> <ul style="list-style-type: none"> • '519 Patent: claims 1, 13, 24 	<p>“illumination unit” <i>Subject to § 112 ¶ 6:</i> Function: transmit a first array of incident light along a path towards a three-dimensional structure Structure: laser(s) optically coupled to a grating or microlens array</p> <p>“array of incident light” Indefinite. If found not indefinite, light incident on an object to form an array of spots.</p>	<p>“illumination unit” Not subject to § 112 ¶ 6, construed as “one or more optical elements that provide or condition light for illumination.”</p> <p>If subject to § 112 ¶ 6: Function: transmit a first array of incident light along a path towards the three-dimensional structure Structure: illumination source comprised of a grating, microlens array, an optics expander, or equivalents thereof.</p> <p>“array of incident light” Not indefinite; plain and ordinary meaning.</p>

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>[C.2] “detector (configured) to measure intensity of each of a plurality of returned light”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> ’519 Patent: claims 1, 4, 13, 24, 30 <p>“measure intensity”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> ’519 Patent: claims 1, 30 <p>“returning light”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> ’151 Patent: claims 10, 25 	<p><i>“detector (configured) to measure intensity of each of a plurality of returned light”</i></p> <p>Indefinite. If found not indefinite, “detector configured to measure intensity of light returned from each illuminated spot that returns along the path and form the three-dimensional structure.</p> <p><i>“measure intensity”</i></p> <p>No further construction required. <i>See</i> construction of “detector” limitations above.</p> <p><i>“returning light”</i></p> <p>Indefinite. If not indefinite, light returned from illuminated spots...from the intra-oral structure”</p>	<p><i>“detector (configured) to measure intensity of each of a plurality of returned light”</i></p> <p>Not indefinite; plain and ordinary meaning; if construction is required: “detector configured to measure intensity of each of a plurality of returned directional projections of light that return along the path and from the three-dimensional structure”</p> <p><i>“measure intensity”</i></p> <p>“detect intensity of returned light”</p> <p><i>“returning light”</i></p> <p>Not indefinite; plain and ordinary meaning</p>
<p>[C.3] “light beams”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> ’519 Patent: claims 20, 21 <p>“incident light beams”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> ’151 Patent: claim 18 <p>“returned light beams”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> ’151 Patent: claim 1 	<p><i>“light beams”</i></p> <p>more than one directional projection of light energy</p> <p><i>“incident light beams”</i></p> <p>light beams that form illuminated spots on the surface of the object</p> <p><i>“returned light beams”</i></p> <p>light beams returned in response to the incident light beams on the three dimensional structure/dentition</p>	<p><i>“light beams”</i></p> <p>directional projections of light energy</p> <p><i>“incident light beams”</i></p> <p>directional projections of light energy propagating along the optical axis illuminating an object</p> <p><i>“returned light beams”</i></p> <p>light beams returned in response to the incident light beams on the three dimensional structure/dentition</p>

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

D. [Issue D] Terms Relating to Focusing

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>[D.1] “focal plane”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '151 Patent: claims 1, 10, 18 • '152 Patent: claims 1, 16, 23 	<p>X-Y plane parallel to the image sensor</p>	<p>a position where one or more light beams from the optical system are focused</p>
<p>[D.2] “focusing optics”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '151 Patent: claims 1, 10, 18, 25 • '152 Patent: claims 1, 9, 16, 23 	<p>optical elements operating telecentrically to define one or more focal surfaces parallel to the image sensor at a position changeable by the optical elements</p>	<p>Not subject to § 112 ¶ 6 and no construction necessary, but if necessary: “one or more optical components that focus light beams to one or more focal planes”</p> <p>If subject to § 112 ¶ 6:</p> <ul style="list-style-type: none"> • Function: “focus light beams to one or more focal planes” • Structure: “confocal optics, relay optics, an endoscopic probing member, and equivalents thereof” <p><i>See, e.g., 15:55-64</i></p>

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

E. [Issue E] Terms Relating to Reference Array

Term	3Shape's Proposed Construction	Align's Proposed Construction
[E.1] “two-dimensional reference array substantially orthogonal to a depth direction” <i>Claims:</i> <ul style="list-style-type: none"> • '433 Patent: claims 1, 12 	array of points in an X-Y plane substantially 90 degrees to a depth direction	a reference plane substantially 90 degrees to a depth direction
[E.2] “depth data corresponding to a plurality of data points defined on a plane substantially orthogonal to a depth direction” <i>Claims:</i> <ul style="list-style-type: none"> • '519 Patent: claims 1, 13, 24 	depth data corresponding to a plurality of points in an X-Y plane substantially 90 degrees to the depth direction	depth data corresponding to a plurality of points on a reference plane substantially 90 degrees to a depth direction

II. SELECTIVE RESCANNING PATENTS**A. [Issue F] Deleting, Removing, or Discarding Portions of a Model**

Term	3Shape's Proposed Construction	Align's Proposed Construction
“remove, from the displayed model, a removed surface portion of the model to be removed according to the user input” <i>Claims:</i> <ul style="list-style-type: none"> • '936 Patent: claims 1, 17 	delete scan data associated with the displayed model to create a removed surface portion of the model according to the user input	Plain and ordinary meaning

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>“discard [discarding] a remainder of the [received] second scan data”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '936 Patent: claims 7, 17 • '609 Patent: claims 19, 23 	<p>“delete [deleting] a remainder of the [received] second scan data”</p>	<p>“no longer use for the model a remainder of the second scan data”</p>
<p>“removing [remove] or deleting [delete] at least the surface data representative of the first surface portion”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '609 Patent: claim 20 	<p>“deleting [delete] the first scan data representing the first surface portion”</p>	<p>Plain and ordinary meaning</p>
<p>“removing at least the surface data representative of the first surface portion having the first surface topology and replacing at least a portion of the removed surface portion using at least a portion of the received second scan data”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '609 Patent: claim 23 	<p>“deleting at least a portion of the first scan data representative of the first surface portion having the first surface topology and registering at least a portion of the received second scan data to a retained portion of the first model”</p>	<p>Plain and ordinary meaning</p>

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

B. [Issue G] The Scope of a Physically Changed Intraoral Portion

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>[G.1] “a physically changed portion of the patient’s intraoral cavity”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '936 Patent: claims 1, 9 	<p>an intraoral portion physically altered by a dental practitioner</p>	<p>Plain and ordinary meaning</p>
<p>[G.2] “accounting for changes in surface topology created by a dental practitioner when [intraorally] scanning a patient’s teeth for a dental procedure”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '609 Patent: claims 1, 12, 23 	<p>accounting for changes in surface topology created by a dental practitioner when [intraorally] scanning a patient’s teeth for a dental procedure</p>	<p>No construction necessary because non-limiting preamble; if limiting: plain and ordinary meaning</p>
<p>[G.3] “the first surface portion having a first physical shape and the second scan data comprises data of the first surface portion having a second physical shape”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '609 Patent: claim 15) 	<p>Indefinite under 35 U.S.C. § 112 ¶ 2</p>	<p>Not indefinite</p>

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

C. [Issue H] The Meaning of Replacing or Updating a Virtual Model

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>[H.1] “replace [replacing] at least a portion of the [removed] surface portion of the model [...] using the received second scan data [at least a portion of the second scan data]”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '936 Patent: claims 1, 9, 17 	<p>register [registering] the [received] second scan data with a retained portion of the model after deleting the scan data of the removed surface portion</p>	<p>use the received second scan data instead of at least a portion of the removed surface portion of the model</p>
<p>[H.2] “updating [update] the first model by modifying only at least a portion of the surface data [first surface portion]”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '609 Patent: claims 1, 12, 23 	<p>Indefinite under 35 U.S.C. § 112 ¶ 2; if found definite: updating [update] the first model by modifying, within only the demarcated surface data representative of the first surface portion, at least a portion of the surface data</p>	<p>Not indefinite; Align agrees to 3Shape's proposed construction.</p>
<p>“register [registering] the second scan data with the model”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '936 Patent: claim 17 	<p>Indefinite under 35 U.S.C. § 112 ¶ 2</p>	<p>Not indefinite</p>

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>“register the second scan data [the second scan data is registered] with the model by aligning identifying data of the second scan data with corresponding parts of the model”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '936 Patent: claims 5, 17 • '609 Patent: claim 17, 21, 23 	Indefinite under 35 U.S.C. § 112 ¶ 2	Not indefinite

D. [Issue I] The Meaning of User Input Identifying Portions of a Model

Term	3Shape's Proposed Construction	Align's Proposed Construction
<p>“receiving [receive] user input, via the displayed first model, demarcating the surface data representative of the first surface portion and the surface data representative of the second surface portion”</p> <p><i>Claims:</i></p> <ul style="list-style-type: none"> • '609 Patent: claims 1, 12 	Plain and ordinary meaning	receiving user input, via the displayed first model, identifying the surface data representative of the first surface portion and, by implication (<i>i.e.</i> the remaining surface portion of the first scan) or by explicit identification, the surface data representative of the second surface portion

Align Technology, Inc. v. 3Shape TRIOS A/S *et al.*

Western District of Texas, Waco Division (Civil Action No. 6:20-cv-00979-ADA)

III. HOLE CLOSING PATENT**A. [Issue J] Determining a Missing Portion of the Intraoral Structure**

Term	3Shape's Proposed Construction	Align's Proposed Construction
“determining [determine] a missing portion of the 3D virtual model that are missing a portion of the intraoral structure of the patient” <i>Claims:</i> <ul style="list-style-type: none"> • '527 Patent: claims 1, 12 	determining [determine] a missing dental structure in the 3D virtual model	determining a portion of the 3D virtual model that is missing a portion of any target part of the intraoral cavity of the patient

B. [Issue K] The Scope of Generating Second 3D Data

Term	3Shape's Proposed Construction	Align's Proposed Construction
“generating [generate] second 3D data” <i>Claims:</i> <ul style="list-style-type: none"> • '527 Patent: claims 1, 12 	generating second 3D data in any manner, including scanning or based on the 3D virtual model	generat[ing] second data representing the intraoral structure of the missing portion of the 3D virtual model by extrapolating the 3D virtual model or interpolating between points in the 3D virtual model